

Appl. No. 10/751,491  
Amdt dated Sep. 23, 2009  
Reply to Office action of Jun. 23, 2009

**Amendments to the Drawings:**

Applicants submit herewith a "Replacement Sheet" for Figure 2 for the above identified application meeting the requirements of 37 C.F.R. § 1.84 and 37 C.F.R. § 1,121(d). In FIG. 2, omitted connecting line from data line DB7 of operational amplifier 205/206 to data line DB7 of operational amplifier 207/208 has been added. This connecting line was inadvertently left out in the prior drawing. Support for this connecting line can be found in the application on page 6, paragraph 20, lines 6-7. No new matter has been added.

Attachment: Replacement Sheet

Appl. No. 10/751,491  
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## REMARKS

### Introduction

Claims 1, 3, 5-7, 9, 11, 12, 15 and 16 are pending in the application. Claims 2, 4, 8, 10, 13 and 14 were previously canceled. Applicants have amended claims 1 and 9. Claims 17-20 have been added. Upon entry of the amendments claims 1, 3, 5-7, 9, 11, 12, 15 and 16-20 will be pending.

### Claim Rejections

#### 35 U.S.C. § 102(e)

Claim 1 is rejected under 35 U.S.C. § 102(e) as being anticipated by Pfaffinger et al., US Patent 7,123,724.

The Examiner states that Pfaffinger discloses an inexpensive, programmable, frequency independent amplitude and phase shifting circuit comprising: an enclosure comprising: a plurality of signal sending digital control lines routed to an amplitude/phase shifting circuit board; and means for selecting a single amplifier for operator selected amplitude or phase gain change over a single frequency; an amplitude/phase shifting circuit board comprising: a plurality of programmable gain operational amplifiers, one amplifier selected at a time to have its gain changed when an operator desires a new amplitude or phase; means for controlling said amplitude/phase shifting circuit; means for holding printing circuit boards and a front panel for receiving input and output signals; a motherboard comprising: means for supplying input signals through said front panel; a power source; digital control lines; and a demultiplexer circuit board; said demultiplexer circuit board within said motherboard comprising: a plurality of signal receiving digital control lines from a digital output card in a personal computer; and a plurality of signal receiving digital control lines for receiving output lines from said demultiplexer.

Applicants have amended claim 1. As amended, claim 1 recites an inexpensive and programmable frequency independent amplitude and phase shifting circuit. The circuit includes an amplitude/phase shifting circuit board including a plurality of programmable gain operational amplifiers, one amplifier selected at a time through a select line to have its gain changed when an operator desires a new amplitude or phase. Each of the programmable gain operational amplifiers includes a plurality of data input lines and a select line, independent of the data input lines, with one amplifier selected at a time

Appl. No. 10/751,491  
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through the select line, to have its gain and/or phase changed when an operator desires a new amplitude or phase. Each of the programmable gain operational amplifiers further include a first input signal line to receive a sine signal waveform and a second input signal line to receive a cosine signal waveform wherein each of the sine and cosine signal waveforms are of the same frequency. A plurality of summing operational amplifiers is coupled to the plurality of programmable operational amplifiers, to sum the sine signal waveform and cosine signal waveform each having the same frequency. A plurality of output signal lines is coupled to the plurality of summing gain operational amplifiers. Each output signal line transmits a phase and/or amplitude shifted sinusoidal signal waveform having the same frequency as the sine signal waveform and cosine signal waveform.

Pfaffinger does not disclose each and every element of Applicants' claim 1, as is required for a 35 USC 102(e) rejection. Pfaffinger instead discloses a sound system with four loudspeakers and an adjustable radiation pattern. Pfaffinger discloses two stereophonic input signals E1 and E2 which are processed with respective phase shifter 6, 9, 11, 14 and with coefficient units 7 and 12 representing damping or amplification.

Applicants disagree with the Examiner's statement that Pfaffinger et al., col. 2, lines 16-23, discloses a "means for selecting a single amplifier for operator selected amplitude or phase gain change over a single frequency". Applicants have reviewed this portion of the specification and find only that the "the phases and amplitudes can be adjusted easily and separately"(See column 2, lines 22-23). Applicants do not believe that Pfaffinger et al. discloses selection of one over the other. This portion of Pfaffinger merely discloses transmission of amplitude or phase information, but does not disclose any means for selecting. This is quite different than applicants' claimed invention with includes "programmable gain operational amplifiers each including a plurality of data input lines and a select line, independent of the data input lines, with one amplifier selected at a time through the select line, to have its gain and/or phase changed when an operator desires a new amplitude and/or phase".

Appl. No. 10/751,491  
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35 U.S.C. § 103(a)

The Examiner has rejected claims 3, 5-6, 7, 9, 11, 12, 15, and 16 under 35 USC 103(a) as being unpatentable over Pfaffinger and in view of official notice that certain concepts and advantages are well known in the art.

Claims 3, 5, and 6

With respect to claims 3, 5, and 6 each of these claims depends from allowable claim 1. In addition, when an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious as well. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Consequently, claims 3, 5, and 6 are believed to be allowable. Applicants therefore respectfully request removal of the rejection to these claims and their allowance.

Claims 7, 9, 11, 12, 15 and 16

Claim 7 depends from independent claim 1. As previously discussed, Applicants submit that independent claims 1 is allowable over Pfaffinger under 35 USC 102(e). Since claim 1 is allowable, Applicants submit that claim 7 is allowable as well.

The Examiner states claim 9 has been analyzed and rejected according to claim 5. Since claim 5 depends from allowable claim 1, Applicants believe that claim 9 is allowable as well.

Additionally, claim 9 includes the steps of inputting sine and cosine signal waveforms, each having the same frequency, to two programmable gain operational amplifiers on an amplitude/phase shifting circuit board wherein each of the two programmable gain operation amplifiers have an output; summing the outputs of the two programmable gain operational amplifiers using one summing operational amplifier on the amplitude/phase shifting circuit board to generate an amplitude and/or phase shifted sinusoidal signal waveform having the same frequency as the sine and cosine signal waveforms; implementing four channels for the inputting and summing steps on the amplitude/phase shifting circuit board with each of said channels connected to a demultiplexer circuit board; powering the demultiplexer circuit board and the amplitude/phase shifting circuit boards through a motherboard; selecting one of the four channels for a gain and/or phase change through the demultiplexer circuit board over a single frequency or sweep in frequency, controlling the programmable, multiple channel amplitude and phase shifting circuit; and sending the amplitude and phase shifted sinusoidal signal waveform having the same frequency as the sine and cosine signal

Appl. No. 10/751,491  
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waveforms to an output line interfacing with a panel on an enclosure containing said motherboard, said demultiplexer circuit board and said amplitude/phase shifting circuit board.

Claim 9 as amended recites an inexpensive, programmable, frequency independent, multiple channel amplitude and phase shifting method which is quite different than that disclosed in Pfaffinger. Pfaffinger describes a sound system for processing stereophonic signals to accommodate the placement of speakers. In particular Pfaffinger does not disclose inputting sine and cosine signal waveforms, each having the same frequency, summing the signals to generate an amplitude and/or phase shifted sinusoidal signal waveform having the same frequency as the sine and cosine signal waveforms, and selecting one of four channels for a gain and/or phase change through a demultiplexer circuit board over a single frequency or sweep in frequency.

Applicants therefore believe that claim 9 is allowable.

Claims 11, 12, 15, and 16 each depend from claim 9. Since claim 9 is believed to be allowable, Applicants believe that claims 11, 12, 15, and 16 are allowable as well. Consequently, removal of the rejection and allowance of claims 11, 12, 15 and 16 is respectfully requested.

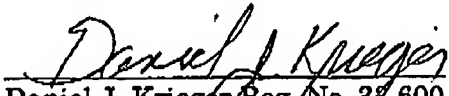
Claims 17-20 have been added by this amendment and are believed to be allowable.

#### Final Remarks

Claims 1, 3, 5-7, 9, 11, 12, 15 and 16-20 are believed to be in condition for allowance. Such allowance is respectfully requested.

Consideration of the remarks of argument and explanation and allowance of the application are respectfully solicited.

Respectfully submitted,

  
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